PIX/ASA 7.x:PIX/ASA平台上的組播和傳送方在外部的配置示例

目錄

簡介

本文檔提供運行7.x版本的思科自適應安全裝置(ASA)和/或PIX安全裝置上的組播配置示例。在本示例中，組播傳送方位於安全裝置外部，內部的主機正在嘗試接收組播流量。主機傳送IGMP報告以報告組成員身份，防火牆使用協定無關組播(PIM)稀疏模式作為到上游路由器的動態組播路由協定，該上游路由器後面是流源。

注意：FWSM/ASA不支援232.x.x.x/8子網作為組號，因為它保留用於ASA SSM。因此，FWSM/ASA不允許使用或遍歷此子網，並且不會建立mroute。但是，如果您在GRE通道中封裝此多點傳播流量，則仍可以通過ASA/FWSM傳遞它。

必要條件

需求

運行軟體版本7.0、7.1或7.2的Cisco PIX或ASA安全裝置。

採用元件

本文檔中的資訊基於運行版本7.x的Cisco PIX或Cisco ASA防火牆。

本文中的資訊是根據特定實驗室環境內的裝置所建立。文中使用到的所有裝置皆從已清除（預設

）的組態來啟動。如果您的網路正在作用，請確保您已瞭解任何指令可能造成的影響。

慣例

請參閱思科技術提示慣例以瞭解更多有關文件慣例的資訊。

背景資訊

PIX/ASA 7.x引入了完整的PIM稀疏模式和雙向支援，用於通過防火牆的動態組播路由。不支援PIM密集模式。7.x軟體仍支援傳統組播「存根模式」，其中防火牆只是介面之間的IGMP代理，如PIX版本6.x所支援的。

以下陳述適用於透過防火牆的多點傳播流量：

- 如果存取清單套用到接收多點傳播流量的介面，則存取控制清單(ACL)必須明確允許流量。如果沒有將存取清單套用到介面，則不需要允許多點傳播流量的顯式ACL專案。
- 無論介面上是否配置了**reverse-path forward check**命令，組播資料包始終會受到防火牆的反向路徑轉發檢查。因此，如果在接收該封包的介面上沒有通往該多點傳送封包來源的路由，該封包會被捨棄。
- 如果介面上沒有返回到組播資料包源的路由，請使用**mroute**命令指示防火牆不要丟棄資料包。

設定

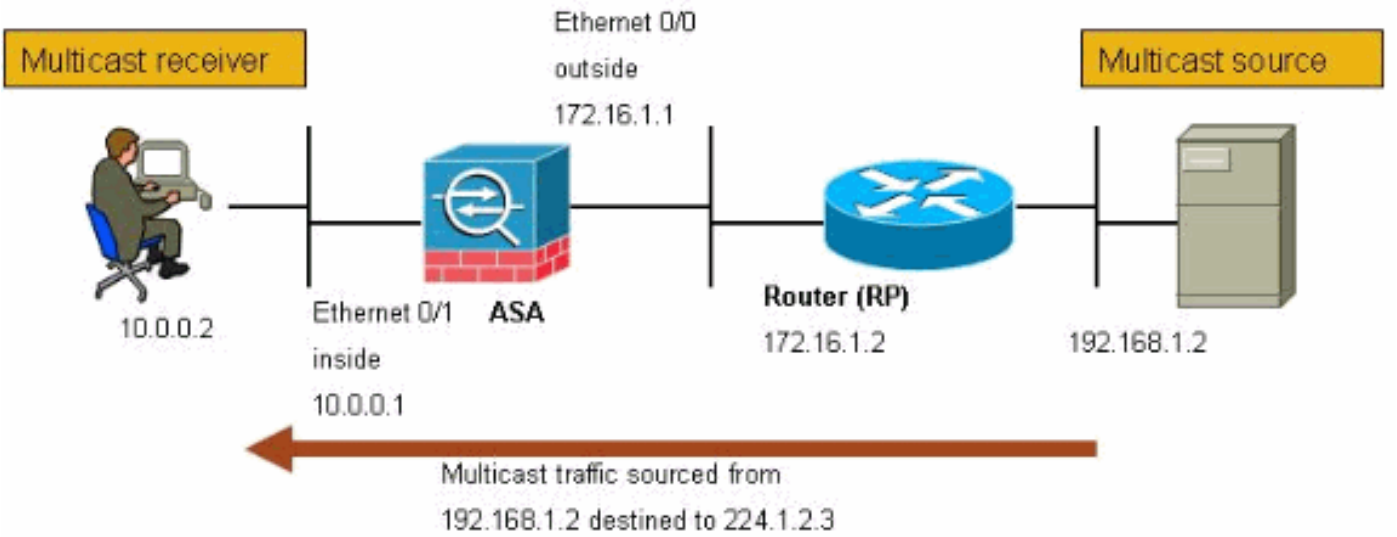
本節提供用於設定本文件中所述功能的資訊。

註：使用Command Lookup Tool(僅供已註冊客戶使用)可獲取本節中使用的命令的詳細資訊。

網路圖表

本檔案會使用此網路設定。

組播流量源自192.168.1.2，在埠1234上使用發往組224.1.2.3的UDP資料包。



組態

本檔案會使用以下設定：

運行7.x版的Cisco PIX或ASA防火牆

```
maui-soho-01#show running-config
 SA Version 7.1(2)
!
hostname ciscoasa
enable password 8Ry2YjIyt7RRXU24 encrypted


 !--- The multicast-routing command enables IGMP and PIM
!--- on all interfaces of the firewall.

multicast-routing
names
!
interface Ethernet0/0
 nameif outside
 security-level 0
 ip address 172.16.1.1 255.255.255.0
!
interface Ethernet0/1
 nameif inside
 security-level 100
 ip address 10.0.0.1 255.255.255.0
!
interface Ethernet0/2
 no nameif
 no security-level
 no ip address
!
interface Ethernet0/3
 shutdown
 no nameif
 no security-level
 no ip address
!
interface Management0/0
 shutdown
 no nameif
 no security-level
 no ip address
!
passwd 2KFQnbNIdI.2KYOU encrypted

!--- The rendezvous point address must be defined in the
!--- configuration in order for PIM to function
correctly. pim rp-address 172.16.1.2 boot system
disk0:/asa712-k8.bin ftp mode passive !--- It is
necessary to permit the multicast traffic with an !---
access-list entry. access-list outside_access_inbound
extended permit ip any host 224.1.2.3
pager lines 24
logging enable
logging buffered debugging
mtu outside 1500
mtu inside 1500
no failover
!--- The access-list that permits the multicast traffic
```

```
is applied !--- inbound on the outside interface.
access-group outside_access_inbound in interface outside
!--- This mroute entry specifies that the multicast
sender !--- 192.168.1.2 is off the outside interface. In
this example !--- the mroute entry is necessary since
the firewall has no route to !--- the 192.168.1.2 host
on the outside interface. Otherwise, this !--- entry is
not necessary.

mroute 192.168.1.2 255.255.255.255 outside
icmp permit any outside
asdm image disk0:/asdm521.bin
no asdm history enable
arp timeout 14400
timeout xlate 3:00:00
timeout conn 1:00:00 half-closed 0:10:00 udp 0:02:00
icmp 0:00:02
timeout sunrpc 0:10:00 h323 0:05:00 h225 1:00:00 mgcp
0:05:00
timeout mgcp-pat 0:05:00 sip 0:30:00 sip_media 0:02:00
timeout uauth 0:05:00 absolute
no snmp-server location
no snmp-server contact
snmp-server enable traps snmp authentication linkup
linkdown coldstart
telnet timeout 5
ssh timeout 5
console timeout 0
!
class-map inspection_default
 match default-inspection-traffic
!
!
policy-map global_policy
 class inspection_default
  inspect ftp
  inspect h323 h225
  inspect h323 ras
  inspect rsh
  inspect rtsp
  inspect esmtp
  inspect sqlnet
  inspect skinny
  inspect sunrpc
  inspect xdmcp
  inspect sip
  inspect netbios
  inspect tftp
!
service-policy global_policy global
!
end
```

驗證

使用本節內容，確認您的組態是否正常運作。

輸出直譯器工具(僅供已註冊客戶使用)(OIT)支援某些show命令。使用OIT檢視show命令輸出的分析。

- **show mroute** — 顯示IPv4多點傳送路由表。

```
ciscoasa#show mroute

Multicast Routing Table
Flags: D - Dense, S - Sparse, B - Bidir Group, s - SSM Group,
       C - Connected, L - Local, I - Received Source Specific Host Report,
       P - Pruned, R - RP-bit set, F - Register flag, T - SPT-bit set,
       J - Join SPT
Timers: Uptime/Expires
Interface state: Interface, State

!--- Here you see the mroute entry for the shared tree. Notice that the !--- incoming
interface specifies outside and that the outgoing interface !--- list specifies inside.

(*, 224.1.2.3), 00:00:12/never, RP 172.16.1.2, flags: SCJ
  Incoming interface: outside
  RPF nbr: 172.16.1.2
  Outgoing interface list:
    inside, Forward, 00:00:12/never

!--- Here is the source specific tree for the mroute entry.

(192.168.1.2, 224.1.2.3), 00:00:12/00:03:17, flags: SJ
  Incoming interface: outside
  RPF nbr: 0.0.0.0
  Immediate Outgoing interface list: Null
```

- **show conn** — 顯示指定連線型別的連線狀態。

```
!--- A connection is built through the firewall for the multicast stream. !--- In this case
the stream is sourced from the sender IP and destined !--- to the multicast group.
ciscoasa#show conn
10 in use, 12 most used
UDP out 192.168.1.2:51882 in 224.1.2.3:1234 idle 0:00:00 flags -
ciscoasa#
```

- **show pim neighbor** — 顯示PIM鄰居表中的條目。

```
!--- When you use PIM, the neighbor devices should be seen with the !--- show pim neighbor
command.

ciscoasa#show pim neighbor

Neighbor Address  Interface          Uptime    Expires DR pri Bidir

172.16.1.2        outside            04:06:37  00:01:27 1 (DR)
```

疑難排解

本節提供的資訊可用於對組態進行疑難排解。

疑難排解程序

請依照以下說明進行操作，對組態進行疑難排解。

輸出直譯器工具(僅供已註冊客戶使用)(OIT)支援某些**show**命令。使用OIT檢視**show**命令輸出的分析。

附註：使用 **debug** 指令之前，請先參閱有關 Debug 指令的重要資訊。

1. 如果組播接收器直接連線到防火牆內部，則它們傳送IGMP報告以接收組播流。使用**show igmp traffic**命令以驗證您是否從內部接收IGMP報告。

```
ciscoasa#show igmp traffic

IGMP Traffic Counters
Elapsed time since counters cleared: 04:11:08

                               Received     Sent
Valid IGMP Packets             413          244
Queries                        128          244
Reports                        159          0
Leaves                         0            0
Mtrace packets                 0            0
DVMRP packets                  0            0
PIM packets                    126          0

Errors:
Malformed Packets              0
Martian source                 0
Bad Checksums                  0

ciscoasa#
```

2. 防火牆可以使用**debug igmp**命令顯示有關IGMP資料的更多詳細資訊。在這種情況下，將啟用調試，主機10.0.0.2將傳送組224.1.2.3的IGMP報告。

```
!--- Enable IGMP debugging. ciscoasa#debug igmp
IGMP debugging is on
ciscoasa# IGMP: Received v2 Report on inside from 10.0.0.2 for 224.1.2.3
IGMP: group_db: add new group 224.1.2.3 on inside
IGMP: MRIB updated (*,224.1.2.3) : Success
IGMP: Switching to EXCLUDE mode for 224.1.2.3 on inside
IGMP: Updating EXCLUDE group timer for 224.1.2.3

ciscoasa#
!--- Disable IGMP debugging ciscoasa#un all
```

3. 驗證防火牆是否具有有效的PIM鄰居，以及防火牆是否傳送和接收加入/修剪資訊。

```
ciscoasa#show pim neigh

Neighbor Address  Interface          Uptime    Expires DR pri Bidir

172.16.1.2        outside            04:26:58  00:01:20 1 (DR)

ciscoasa#show pim traffic

PIM Traffic Counters
Elapsed time since counters cleared: 04:27:11

                               Received     Sent
Valid PIM Packets              543          1144
Hello                          543          1079
Join-Prune                     0            65
Register                       0            0
Register Stop                  0            0
Assert                         0            0
Bidir DF Election              0            0

Errors:
Malformed Packets                           0
Bad Checksums                               0
Send Errors                                 0
Packet Sent on Loopback Errors              0
```

```
Packets Received on PIM-disabled Interface  0
Packets Received with Unknown PIM Version   0
Packets Received with Incorrect Addressing  0
ciscoasa#
```

4. 使用capture命令驗證外部介面是否收到該組的組播資料包。

```
ciscoasa#configure terminal

!--- Create an access-list that is only used !--- to flag the packets to capture.
ciscoasa(config)#access-list captureacl permit ip any host 224.1.2.3

!--- Define the capture named capout, bind it to the outside interface, and !--- specify to
only capture packets that match the access-list captureacl. ciscoasa(config)#capture capout
interface outside access-list captureacl

!--- Repeat for the inside interface. ciscoasa(config)#capture capin interface inside
access-list captureacl

!--- View the contents of the capture on the outside. This verifies that the !--- packets
are seen on the outside interface ciscoasa(config)#show capture capout
138 packets captured
   1: 02:38:07.639798 192.168.1.2.52292 > 224.1.2.3.1234:  udp 1316
   2: 02:38:07.696024 192.168.1.2.52292 > 224.1.2.3.1234:  udp 1316
   3: 02:38:07.752295 192.168.1.2.52292 > 224.1.2.3.1234:  udp 1316
   4: 02:38:07.808582 192.168.1.2.52292 > 224.1.2.3.1234:  udp 1316
   5: 02:38:07.864823 192.168.1.2.52292 > 224.1.2.3.1234:  udp 1316
   6: 02:38:07.921110 192.168.1.2.52292 > 224.1.2.3.1234:  udp 1316
   7: 02:38:07.977366 192.168.1.2.52292 > 224.1.2.3.1234:  udp 1316
   8: 02:38:08.033689 192.168.1.2.52292 > 224.1.2.3.1234:  udp 1316
   9: 02:38:08.089961 192.168.1.2.52292 > 224.1.2.3.1234:  udp 1316
  10: 02:38:08.146247 192.168.1.2.52292 > 224.1.2.3.1234:  udp 1316
  11: 02:38:08.202504 192.168.1.2.52292 > 224.1.2.3.1234:  udp 1316
  12: 02:38:08.258760 192.168.1.2.52292 > 224.1.2.3.1234:  udp 1316
  13: 02:38:08.315047 192.168.1.2.52292 > 224.1.2.3.1234:  udp 1316
  14: 02:38:08.371303 192.168.1.2.52292 > 224.1.2.3.1234:  udp 1316
  15: 02:38:08.427574 192.168.1.2.52292 > 224.1.2.3.1234:  udp 1316
  16: 02:38:08.483846 192.168.1.2.52292 > 224.1.2.3.1234:  udp 1316
  17: 02:38:08.540117 192.168.1.2.52292 > 224.1.2.3.1234:  udp 1316
  18: 02:38:08.596374 192.168.1.2.52292 > 224.1.2.3.1234:  udp 1316
  19: 02:38:08.652691 192.168.1.2.52292 > 224.1.2.3.1234:  udp 1316
  20: 02:38:08.708932 192.168.1.2.52292 > 224.1.2.3.1234:  udp 1316
  21: 02:38:08.765188 192.168.1.2.52292 > 224.1.2.3.1234:  udp 1316
  22: 02:38:08.821460 192.168.1.2.52292 > 224.1.2.3.1234:  udp 1316
  23: 02:38:08.877746 192.168.1.2.52292 > 224.1.2.3.1234:  udp 1316
  24: 02:38:08.934018 192.168.1.2.52292 > 224.1.2.3.1234:  udp 1316

 !--- Here you see the packets forwarded out the inside !--- interface towards the clients.
ciscoasa(config)#show capture capin
89 packets captured
   1: 02:38:12.873123 192.168.1.2.52292 > 224.1.2.3.1234:  udp 1316
   2: 02:38:12.929380 192.168.1.2.52292 > 224.1.2.3.1234:  udp 1316
   3: 02:38:12.985621 192.168.1.2.52292 > 224.1.2.3.1234:  udp 1316
   4: 02:38:13.041898 192.168.1.2.52292 > 224.1.2.3.1234:  udp 1316
   5: 02:38:13.098169 192.168.1.2.52292 > 224.1.2.3.1234:  udp 1316
   6: 02:38:13.154471 192.168.1.2.52292 > 224.1.2.3.1234:  udp 1316
   7: 02:38:13.210743 192.168.1.2.52292 > 224.1.2.3.1234:  udp 1316
   8: 02:38:13.266999 192.168.1.2.52292 > 224.1.2.3.1234:  udp 1316
   9: 02:38:13.323255 192.168.1.2.52292 > 224.1.2.3.1234:  udp 1316
  10: 02:38:13.379542 192.168.1.2.52292 > 224.1.2.3.1234:  udp 1316
  11: 02:38:13.435768 192.168.1.2.52292 > 224.1.2.3.1234:  udp 1316
  12: 02:38:13.492070 192.168.1.2.52292 > 224.1.2.3.1234:  udp 1316
  13: 02:38:13.548342 192.168.1.2.52292 > 224.1.2.3.1234:  udp 1316
  14: 02:38:13.604598 192.168.1.2.52292 > 224.1.2.3.1234:  udp 1316
  15: 02:38:13.660900 192.168.1.2.52292 > 224.1.2.3.1234:  udp 1316
```

```
  16: 02:38:13.717141 192.168.1.2.52292 > 224.1.2.3.1234:  udp 1316
  17: 02:38:13.773489 192.168.1.2.52292 > 224.1.2.3.1234:  udp 1316
  18: 02:38:13.829699 192.168.1.2.52292 > 224.1.2.3.1234:  udp 1316
  19: 02:38:13.885986 192.168.1.2.52292 > 224.1.2.3.1234:  udp 1316
  20: 02:38:13.942227 192.168.1.2.52292 > 224.1.2.3.1234:  udp 1316
  21: 02:38:13.998483 192.168.1.2.52292 > 224.1.2.3.1234:  udp 1316
  22: 02:38:14.054852 192.168.1.2.52292 > 224.1.2.3.1234:  udp 1316
  23: 02:38:14.111108 192.168.1.2.52292 > 224.1.2.3.1234:  udp 1316
  24: 02:38:14.167365 192.168.1.2.52292 > 224.1.2.3.1234:  udp 1316
ciscoasa(config)#

 !--- Remove the capture from the memory of the firewall. ciscoasa(config)#no capture
capout
```

已知錯誤

思科漏洞ID CSCse81633(僅供註冊客戶使用)— ASA 4GE-SSM Gig埠靜默丟棄IGMP加入。

- **症狀** — 將4GE-SSM模組安裝到ASA中並在介面上配置組播路由以及IGMP時，4GE-SSM模組的介面上會丟棄IGMP加入。
- **條件** — 在ASA的板載Gig介面上不會丟棄IGMP連線。
- **解決方法** — 對於組播路由，請使用板載Gig介面埠。
- **已在版本**中修復 — 7.0(6)、7.1(2)18、7.2(1)11

相關資訊

- Cisco ASA 5500系列自適應安全裝置支援
- Cisco PIX 500系列安全裝置支援
- 技術支援與文件 - Cisco Systems